

## ROOFING DEBRIS COLLECTION CART AND METHOD OF COLLECTING SUCH DEBRIS

### BACKGROUND OF THE INVENTION

**[0001]** This invention relates to a moveable cart which is particularly useful for receiving and moving away debris that is dropped from the roof of a house or other building during roofing repairs or replacement.

**[0002]** During the repairs or replacements of building roofs, the roofer tradesmen typically remove unwanted shingles, bricks or the like roofing materials from the existing roofs. They discard such materials by throwing them from the roof to the ground. The materials which are discarded, and which are referred to as "debris," form an unsightly deposit along the sides of a house. In addition, collecting that debris which typically is scattered on the ground near the walls of the house, takes considerable time and effort. The debris often gets in the way of the tradesmen during their work, such as blocking the lifting of replacement material to the roof. Thus, the tradesmen may have to stop their repair work, when necessary to remove piles of debris which block their movements. Moreover, where there are plantings, such as bushes or flower beds along side the walls of a house, the falling debris may damage or destroy such plantings. In some cases, that may require replacement of plants after the roof work is completed.

**[0003]** It is desirable to have some simplified way and equipment to receive and collect the falling debris which is thrown or drops from a roof during repair or replacement work to minimize the time and effort required for collecting such debris and for minimizing damaging plantings located near the house walls.

Thus, this invention is concerned with providing a simplified, inexpensive, collection cart which may be used either singly or with a group of aligned carts, that can be easily positioned to collect debris dropping from roofs and which can be easily handled by one person so that the labor of collecting fallen debris is minimized, the number of times required to remove piles of debris which interfere with the replacement work is reduced, and damage to plantings is minimized.

**[0004]** In the past, the use of wheel barrows or other containers have been used but these require considerable labor to collect the debris that piles upon the ground and to place such debris into a wheel barrow or container for removal. Thus, it would be desirable to have a system which substantially reduces the need to manually pick up fallen debris from the ground for removal and to protect the surrounding plantings from being excessively damaged.

## SUMMARY OF THE INVENTION

**[0005]** This invention relates to a system, including a cart which is formed to fit adjacent the wall of a dwelling house for receiving debris thrown or dropped off the roof during repair or reconstruction of the roof by a roofer tradesman. Preferably a series of such carts are aligned, end to end, to provide an elongated receptacle along the side of the house for receiving falling debris. Thus, the aligned carts divide the combined receptacle into a number of parts. Each part, that is each cart, can be easily moved by a single workman to a collection vehicle or large collection container for discarding the debris and preventing the debris from scattering around the building.

**[0006]** This invention contemplates the utilization of large panels, as for example, large plywood sheets, which can be positioned along the wall of a house or other building at an angle to straddle plantings located near the house wall. The panels are positioned between the carts and the wall so as to direct falling debris into one or more carts, thereby collecting randomly dropping debris and preventing the debris from scattering upon the ground around the house. Alternatively the lower edges of the panels may be attached to an edge of a cart to support the panels and raise them above the ground.

**[0007]** The invention contemplates utilizing a simplified cart which preferably is in the form of a box-like container, shaped like an inverted, truncated pyramid. The shape provides sloping inner and outer walls and end walls with a small base and an open large top. The container is mounted upon a suitable support frame, such as a generally rectangularly shaped framework of

metal strips upon which the container base is secured by mechanical fasteners, such as rivets or bolts or by welding. Relatively large wheels are mounted upon the bottom of the frame for supporting the cart and enabling a single workman to move the cart.

**[0008]** It is contemplated to align the large panels or sheets, end-to-end, and to lean them against the wall of a house at an angle that corresponds to the angle of the inner wall of the container. Thus, the panels are arranged next to, and approximately parallel to, the adjacent walls of the container portions of the carts. Alternatively, the lower edges of the panels may be supported upon the adjacent walls of the carts. Hence, debris which is randomly dropped or thrown from the roof of a house during work on the roof, will drop down upon an angled panel and will slide down or be directed downwardly into a cart container. The relatively large wheels of the carts reduce or limit the amount of contact that the carts make with plantings that may be located along the side of the building to minimize damage to such plantings.

**[0009]** By utilizing a series of such carts, arranged end-to-end, to form an elongated receptacle alongside the wall of the house, the "receptacle" that is formed by the series is separated into manageable parts for transporting the collected debris. Thus, debris falling anywhere along the wall where the carts are located will drop into this elongated "receptacle" whose constituent carts can be manually rolled to a suitable central dumping location, such as a trash truck or large trash container of the type that is conventionally used at construction sites.

**[0010]** An object of this invention is to provide a method or system by which debris tumbling or dropped from the roof of a house will not scatter, but rather will be easily collected by being directed into relatively small size containers that can be easily moved by a single individual for moving and dumping the debris that is collected.

**[0011]** A further object of this invention is to provide a system by which debris falling from the roof of a building during construction on the roof will not scatter or damage plantings and which by being collected in a series of moveable carts, minimizes the amount of labor and effort required for disposing of the debris.

**[0012]** Yet another object of this invention is to provide an inexpensive cart of simplified construction, which can be used individually or in a series of such carts arranged end-to-end for providing an elongated receptacle for receiving falling debris. In cooperation with suitable panels that direct the dropping debris into the carts, the cart-panel assembly will protect the building wall and any adjacent plantings from falling debris.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0013]** **Fig. 1** is a top plan view of the cart, illustrating a preferred shape of the cart.

**[0014]** **Fig. 2** is a cross-sectional, side view taken in the direction of arrows 2-2 of **Fig. 1**.

**[0015]** **Fig. 3** is a cross-sectional, front view of the cart taken in the direction of arrows 3-3 of **Fig. 1**.

**[0016]** **Fig. 4** is a bottom, plan view of the cart.

**[0017]** **Fig. 5** is a disassembled view of the support frame and wheel mounting parts.

**[0018]** **Fig. 6** schematically illustrates an end view of a cart positioned near a building wall and a panel propped against the wall, next to the cart for receiving dropped or falling debris from the roof of the building.

**[0019]** **Fig. 7** is a schematic illustration, similar to **Fig. 6**, but showing the panel lower edge supported upon the upper edge of the cart wall that is nearest to the building.

**[0020]** **Fig. 8** illustrates a series of carts arranged end-to-end to form a continuous, elongated receptacle along the side of the wall of the house, with a series of panels arranged between the carts and the wall of the house.

**[0021]** **Fig. 9** is an enlarged, fragmentary view of the socket formed on the upper edge of the cart wall for loosely supporting the panel lower edge.

**[0022]** **Fig. 10** schematically shows the cart tipped for dumping debris.

**[0023]**    **Fig. 11** illustrates, in enlarged scale, the attachment of the rear wheels to the frame of the cart.

## DETAILED DESCRIPTION

**[0024]** **Figs. 6 and 7** schematically illustrate a debris collection cart **10** arranged alongside of the wall **11** of a house, which is schematically illustrated. The roof **12** of the house is shown schematically. The cart is arranged parallel to, and spaced a short distance from, the house wall **11** and rests upon the ground **13**. Plantings **14**, such as flowers or bushes, are schematically illustrated.

**[0025]** A large plywood sheet **15** is propped against the wall of the house. The sheet or panel may be formed of any commercially available material and is preferably large enough to extend a considerable distance above the cart and to be arranged at an angle relative to the wall of the house so that the panel straddles the plantings **14**. Such sheets typically are commercially available in 4ft. x 8ft. sizes with thicknesses of about ¼ to ½ inches. However, the sheet sizes and thicknesses may vary.

**[0026]** During work on the roof, roofers usually remove and discard pieces of shingles, bricks, and other such materials that are found on roofs. Normally the roofers either throw or drop those items off the roof to fall to the ground. **Figs. 6 and 7** schematically show the debris **16** which, for example, comprises discarded shingles or the like. The debris, in falling from the roof, tends to either slide or bounce down the surface of the panel **15** and is directed into the cart.

**[0027]** As illustrated in **Figs. 1-5**, the cart comprises a container or receptacle **20** which preferably is shaped like an inverted truncated pyramid.



That is, the container is formed with a front or outer wall **21**, a rear or inner wall **22** and opposite end walls **23** and **24** that are joined together, such as by welding bolts or one-piece construction. Similarly the walls are jointed to a floor or base **25**. The container has an open top **26**. The open top corresponds to the larger base of a pyramid and the floor or base **25** corresponds to the smaller base of an inverted truncated pyramid.

**[0028]** The container may be made of suitable sheet metal, or plastic, which is strong enough to sustain the force of dropping debris. Preferably, an edge bead or flange **28**, such as an elongated strip of angle iron is fastened along the upper edges of the walls forming the container. This strengthens the walls and resists the impacts of heavy debris, such as falling bricks.

**[0029]** Handles **29** are secured on the end wall **23**. Another handle may be attached on the opposite end wall (not shown). Preferably, the handle is formed of a U-shaped bent metal strip whose legs are secured mechanically to the container end walls, such as by welding or by suitable bolts and nuts or by rivets.

**[0030]** The container rests upon a horizontally arranged support frame **30**. The frame may be formed in a rectangular shape out of longitudinal strips **31** connected together by transverse strips **32**. The strips may be formed of conventional angle iron. The actual construction of the frame may vary and can be appropriately formed by one skilled in the manufacture of metal objects of this type.

**[0031]** Relatively large wheels **35**, for example, wheels that are eight inches in diameter or more, are secured to the bottom of the frame for enabling the cart to be easily moved. Inverted U-shaped yokes **36** are secured to the frame at one end, which forms the forward end, of the cart. Similar inverted U-shaped yokes **37** are secured to the opposite, rear end of the cart. Preferably the forward yokes are fastened by bolts **38** (schematically shown) to plates **39**, which in turn are fastened by bolts **40** to the frame. The yokes at the rear end, preferably are secured by a pin **42** or similar rotateable connector for pivotally connecting the rear yokes **37** to the frame so that they may swivel. Thus, the rear wheels can swivel during movement of the cart. The bolts **38** that secure the yokes **36** at the forward end of the cart may hold those yokes against swiveling so that only the rear wheels can swivel. Alternatively, both front and rear wheels can be swivellably attached. The wheels **35** may be connected to the yokes by suitable axles **45**.

**[0032]** In operation, the roofer positions a cart near, but spaced a short distance from, the wall of the house. The rear wall **22** of the cart is arranged parallel to the wall. The large wheels **25** of the cart raise the box-like container and frame of the cart above the plantings. In most cases, the cart is spaced high enough, so that it minimally disturbs any plantings that may be located near the wall. For moving the cart, the handle **28** of the cart form a convenient way to manually grasp and move the cart as desired.

**[0033]** The large panels or sheets **15** which may be, for example, formed of standard size plywood panels, or other suitable panel material, are

propped against the wall of the house at an angle which corresponds to the angle of the rear wall **22** of the cart. By way of example, approximately a 52 degree angle relative to the horizontal ground or 38 degree angle relative to the vertical wall is preferable for this purpose. The exact angle is not critical, but may be empirically determined by the workmen. By arranging the panel at approximately the same angle as the adjacent wall of the cart, the two may be arranged close enough that they can be arranged in substantial face-to-face contact as shown in **Fig. 6**. Small variances in distance between the panel surface and the cart wall would not be material because the debris, generally, is likely to be large enough to fall across any small spaces between the cart wall and the panel surface.

**[0034]** As illustrated in **Fig. 7**, the panel **15** may be arranged with its lower edge loosely fitted within a socket **50** formed on the upper edge of the rear wall **22**. The socket, as schematically illustrated in **Fig. 9**, is formed by attaching an angle strip **51** to the edge bead or strip **28** and attaching a flat strip **52** to the upper portion of wall **22**. Because the socket is wider than the thickness of the panel **15**, the angle of the panel relative to the wall, can be adjusted a small amount, as desired by the roofing workmen.

**[0035]** While a single cart together with a single panel may be used during repairs on a roof for catching debris thrown or dropped from the roof, preferably a series of substantially identical carts, are arranged end-to-end, as illustrated in **Fig. 8**, to form a continuous receptacle made of the individual carts. The angularity of the end walls of the carts provide a space between adjacent carts within which space the handles **29** may extend. The angularity of the end

walls may vary, but a roughly 52 degree angle relative to the horizontal is preferable for good results.

[0036] Where there are a number of carts arranged end-to-end, a number of panels are also arranged edge-to-edge and are leaned against the building wall at an angle, as indicated in **Fig. 6**. Thus, the workmen may randomly throw or drop debris from the roof knowing that the falling debris will not damage the building wall or windows or the plantings that are covered by the panels. Rather, the debris will be directed into one or another of the carts.

[0037] When the carts are sufficiently filled or when the job is completed, a single workman can easily grasp the handles of the carts, and push the carts, one by one, to either a dump area, or to a suitable large debris container for debris or to a trash removal truck or the like. Significantly, the debris is collected in the containers without being dispersed upon the grounds around the house. Collection in the carts materially reduces the amount of labor needed in cleaning up after work on a roof. That materially saves money and time in performing roof repairs or replacements, as well as avoiding the unattractive appearance of scattered debris during the construction work.

[0038] The sizes and the angularities of the walls of the containers may vary. By way of example, the length of the front and rear walls of the container may be on the order of about 4 feet, plus or minus some small amount and the width of the container may be on the order of roughly 3 feet in length. The container may be roughly in the order of about 11¼ inches in height. The flat base portion may be roughly 30 inches long and 20 inches in width. And the

angle iron edge strip may be about  $\frac{1}{2}$  inch by  $\frac{1}{2}$  inch and  $\frac{1}{8}$  inch thick and made of a suitable metal or plastic. The socket forming strip **51** may be of sufficient height to provide a socket width of roughly  $\frac{3}{4}$  inch, depending upon the thickness of the rear metal wall **22**. Hence, a commercial 4ft. wide by 8ft. wide plywood panel of about  $\frac{1}{4}$  inch to  $\frac{1}{2}$  inch thickness can easily fit into the channel **50**, and its angle of tilt against the house wall can be adjusted.

**[0039]** The dimensions set forth above are exemplifications of containers that are of a size which could be easily maneuvered about by a single workman and yet can receive a substantial load of debris. However, as can be seen, the sizes of the containers and the overall sizes of the carts may vary, subject to the containers being of a size which permits relatively easy handling of the cart by an individual workman and of a depth and width and elevation above the ground that will have a minimal destructive effect on plantings located near the sides of the house.

**[0040]** Having fully described an operative embodiment of this invention and the method of performing it, it should be understood that this invention may be further developed within the scope of the following claims. Accordingly, it is now claimed: